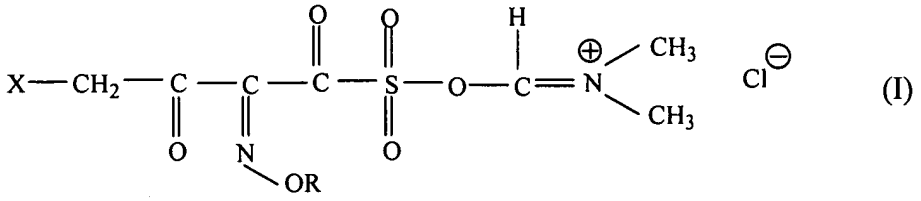
ABSTRACT

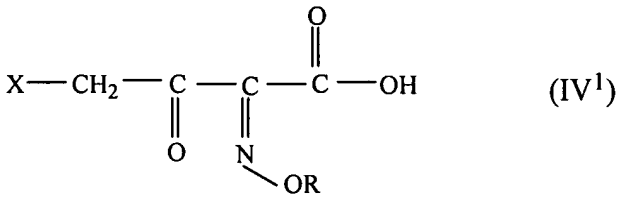
A novel 4-halo-2-oxyimino-3-oxo butyric acid-N, N-dimethyl formiminium chloride chlorosulfate of formula (I) useful in the preparation of cephalosporin antibiotics



(I)

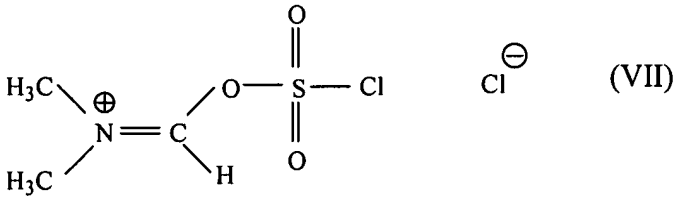
wherein

X is chlorine or bromine; R is hydrogen, C $_{1-4}$ alkyl group, an easily removable hydroxyl protective group, $-CH_2COOR_5$, or $-C(CH_3)_2COOR_5$, wherein R_5 is hydrogen or an easily hydrolysable ester group. The compound of fomula (I) is prepared by reacting 4-halo-2-oxyimino-3-oxobutyric acid of formula (IV^1),



(IV^1)

wherein X , R and R_5 are as defined above, with N, N-dimethylformiminium chloride chlorosulphate of formula (VII)



(VII)

in an organic solvent at a temperature ranging from -30^0 C to -15^0 C. The cephalosporins that may be prepared from the intermediate include cefdinir, cefditoren pivoxil, cefepime, cefetamet pivoxil, cefixime, cefmenoxime, cefodizime, cefoselis, cefotaxime, cefpirome, cefpodoxime proxetil, cefquinome, ceftazidime, cefteram pivoxil, ceftiofur, ceftizoxime, ceftriaxone and cefuzonam.